

II. CERIANTHINEÆ.

The *Cerianthineæ* are distinguished from other sea-anemones (R. Hertwig, 'Challenger,' Reports, vol. VI, p. 123) in having the septa unpaired.

CERIANTHUS, Delle Chiaje.

7. *Cerianthus andamanensis*, n. sp.

The body is loosely encased, up to the outer tentacular crown, in a soft sheath of a dull cinnamon-brown colour, the oral disk between the two crowns of tentacles is of the same colour but lighter, and the tentacles with the central part of the oral disk are creamy white.

The tentacles of the outer crown are very thick-set, and number about 160; those of the inner crown are not nearly so thick-set, and number hardly half as many.

The septa and mesenteric filaments extend to the bottom of the gastral cavity.

The base is perforated centrally.

Three specimens from Port Blair. In the contracted state the shape of the body is beautifully caryophyllaceous, and the length of the largest specimen is a little short of four inches—(99 millim.) This species appears to be very close to *Cerianthus americanus*, Verrill, which it approaches in size, judging from the magnitude of the spirit specimens.

Note on some methods of preparing botanical specimens, communicating Memoranda by MESSRS. C. MARIES, F.L.S., and R. PANTLING.—By D. PRAIN, M.B.

[Read June 5th.]

Usually the preparation of botanical specimens is easy; some natural families, however, give a good deal of trouble. Those who have private herbaria are as interested to hear of improved methods of treating such families, as are those who look after public collections. The writer, therefore, would call general attention to modes of dealing with three troublesome families—*Magnoliaceæ*, *Coniferæ* and *Orchidaceæ*.

I. **MAGNOLIACEÆ.** The *Champak* family is not troublesome to preserve as to the leaves, but the flowers are apt to go to pieces. If, however, pieces of blotting-paper are carefully insinuated between the petals before the specimen is laid in drying-paper, and if the specimen is then rapidly fire-dried, even adult flowers may be preserved entire. Nothing, however, prevents the shrinkage of the large leathery petals. In this order shrinkage is so excessive and so unequal, that in the case of

herbarium specimens the estimation of the size of the flowers becomes to some extent guess-work.

Those who know Rangoon may recollect the practice of selling bottles of flowers on the stairs of the Shwe-Dagon Pagoda. Unless, however, their stay has been long enough, or their interest sufficiently great, to have led them to notice that the flowers in these bottles are not fresh but preserved, they may have supposed, as the writer did, that the medium in which the flowers are kept is water.

Everyone, however, has not been so void of curiosity. When Assistant Surgeon C. L. Bose,* was in Rangoon in 1885, he was struck by the length of time the flowers were kept, and brought some with him to Calcutta for examination. Dr. Warden, then chemical examiner, and Mr. Bose found on examining the fluid that it was a solution of Alum. The solution is of no special strength; the Burman, being a happy-go-lucky individual puts some Alum into the water along with the flowers and is not particular as to the amount.

Mr. Bose brought only *Champak* petals; some of these are in shape, size, colour and consistence much as they were when taken from the tree eight years ago. Here then we seem to have the means of overcoming the difficulty, hitherto insoluble, of preserving the natural size in specimens of *Magnoliaceous* flowers.

Though only *Champak* was brought by Mr. Bose, the writer recollects seeing *Plumieria* and *Nymphaea* flowers as well, and a bottle in which Dr. Warden placed some green leaves with a 1% Alum solution at the time he examined the Rangoon bottle has its contents very much as they were when he put them in. There is, therefore, no reason why the use of Alum solution should be confined to *Magnolia* flowers.

It should be understood that the use of Alum solution is only suggested as an auxiliary to the usual means of preserving specimens. Wet preparations are to be avoided; they are difficult to handle, difficult to keep, difficult to house, and still more difficult to carry about. But occasions arise when wet specimens are of the greatest moment as supplements to dried ones, and the Burmese preservative has the advantages over spirit of not discolouring the specimen or rendering it brittle. Most important of all, one can carry Alum about as a solid and make a solution when required.

If the bottles are not carefully sealed the specimens do not keep. The flowers immersed in the fluid do not suffer, but as the water evaporates the flowers at the top get exposed to the air, decay, and fall in a flocculent mass to the bottom. This flocculent matter keeps pushing up others to undergo the same decomposition. But from a well-stoppered bottle—

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a glass stopper with wax is best—the fluid does not evaporate; the flowers, therefore, do not reach the air and seem to keep indefinitely.

II. CONIFERÆ. The *Pine*, *Fir* and *Spruce* family is usually very troublesome to preserve both in the field and afterwards in the Herbarium, from the readiness with which the cones fall to pieces and the leaves (needles) drop off. In the Calcutta Herbarium there are a number of beautiful specimens of Japanese *Conifers* presented by Mr. C. Maries, F.L.S.,* who collected them. The writer anxious to learn the secret of the success with which so troublesome a family had been treated asked Mr. Maries if he would kindly explain his method. Mr. Maries' reply, which he has courteously permitted the writer to communicate to the Society, is as follows:—

“*Conifer* specimens of the *Abies* or *Picea* section are generally rather difficult to dry. When I was in the island of Yesso, in the North Pacific, I was very much troubled with them. One night I arrived very wet at my rooms and stacked my branches of *Abies*, with the cones attached, round a big charcoal fire. I fell asleep and woke up next morning to find my specimens dried beautifully. After this I always dried them slowly over a charcoal fire, first wiring or wrapping up the cones. All fir-cones, except Pine, or Spruce, or Cedar, should be tied up either with cotton or wire immediately they are gathered. The Spruce section is the most difficult to dry, even roasting is not always a success.”

Mr. Maries goes on to say:—“The way I dry ferns and leaves of trees for fitting up my bird-cases” (in the Gwalior State Museum) “to preserve their natural shape, is to take some very *clean*, washed sand, arrange the leaves in a *clean* box and fill in with hot sand, and keep at a temperature of 100° to 120° Fh. or even more. They soon dry (I imagine Spruce would dry like this if very hot) and flowers dry beautifully in this way, some keeping their natural colours in a most remarkable manner. When I was young and living in London, an old gardener taught me this; he used it for ferns and roses for winter decorations when fresh ferns and flowers were scarce. All the dried flowers one sees in florists' shops in London are dried in hot sand.” —C. MARIES.”

III. ORCHIDACEÆ. The *Orchid* family is perhaps the most troublesome of all natural families to represent in Herbaria. In all the epiphytic kinds the leaves and, in most of them, the flowers also are apt to drop off when the specimens are dried in the ordinary way, while even in ground Orchids the pressure that has to be applied during drying usually so distorts the flower that a true conception of the relative

* Superintendent of the State Gardens and State Museum at Gwalior.

position of its parts becomes impossible. This is very unfortunate, because there is no natural order where a proper understanding of the position of parts, particularly of the lip and the column, is so necessary. Spirit preparations are most unsatisfactory. If the spirit is sufficiently strong to preserve the flowers the parts become so brittle that when handled they go to pieces; if weak enough to prevent this hardening and consequent friability the spirit does not adequately preserve the specimens. The jars and bottles in which the specimens are placed, moreover, are very apt to get broken, and any one who has tried it will testify to the worry that is caused by the necessity of having to carry about a stock of alcohol. Dr. Schweinfurth when travelling in Africa, made use of a most excellent modification of the method of preservation in spirit. He laid his specimens between sheets of drying paper, laid these in tin-boxes and soldered them up after soaking the paper thoroughly with spirit. He was thus able greatly to reduce the initial stock of alcohol and was freed from the subsequent anxiety of possible breakages. But the objections to spirit as a preserving medium for flowers are not obviated by this mode of applying it, and it remains to be seen whether the Alum solution will answer as a substitute if used in this way.

In the meantime Mr. R. Pantling,* who for many years has made a special study of Orchids, has perfected a method of drying them so far in advance of anything hitherto accomplished that it is highly desirable, that the details of his process should be made known. At the writer's request Mr. Pantling has supplied these details and like Mr. Maries, has courteously given him permission to communicate the account to the Society. This memorandum is given below; it will be noticed that it consists of a happy combination, suitably modified, of the ordinary method of fire-drying recommended for all ordinary plants with the hot-sand process mentioned by Mr. Maries as that practised by florists in Europe.

To dry Orchid Specimens.—In order to preserve *Orchids* so that “the leaves and flowers remain intact and do not fall away in fragments “as invariably happens to epiphytal species when pressed in the ordinary way between drying paper, the procedure to be adopted should “be as follows. Procure a light metal box—14 inches, by 12 inches, “by 6 inches deep is a convenient size—and place over the bottom half- “an-inch of sand. Arrange a specimen between two sheets of thin “paper inside the box and cover over with a layer of sand taking care, “as far as possible, that the interstices between leaves, etc., are filled “up. Repeat this until the box is full, then place it on a stove or above

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“ a fire and dry with a brisk heat. No weights for pressing are necessary. As a general rule, the sand at the commencement of drying should not be allowed to attain a greater heat than can be borne by the hand, and this should be lessened as drying proceeds or the flowers may become scorched and rendered useless for purposes of dissection.

“ Occasionally species (*Dendrobium Pierardi* Roxb., and *Phajus alba* Lindl.) are met with whose perianths will adhere to the paper; the removal of the perianth cannot then be effected without mutilation. This may be obviated by using porous drying-paper or blotting-paper instead of the thin kind recommended above.

“ The advantages of drying in hot sand as compared with the universally adopted method in paper are :—*First*, the rapidity in preparing specimens; plants belonging to such genera as *Saccolabium*, *Vanda*, *Cleisostoma*, etc., being ready within a week against a period of three to four months by the old method. *Secondly*; when finished the specimens will be found preserved in their entirety and will not fall to pieces. The column and lip will be found to have suffered little, as the pressure of the sand is not sufficient to cause any material damage to these organs”.—R. PANTLING.

The boxes that Mr. Pantling has found handiest for his purpose are old kerosine tins cut through lengthways; one is placed within the other to give more strength to the tin and a rivet or two hammered through the seams as the solder runs when the boxes are over the fire. The only thing to be guarded against in the process is the adhesion of the flowers of certain species to the paper, and Mr. Pantling shows how this is easily overcome.

The possibilities of this method either as recommended by Mr. Pantling or with slight modifications for the drying of succulent species generally, such as the *Cactus* family and fleshy members of the *Spurge* family, as well as for families like *Scitamineæ*—the ginger family—and for water plants, where the flowers are very delicate and therefore very difficult to dry seem considerable and the plan is well worth trying for them as well as for orchids.
